

THE AMERICAN AEDES OF THE SERRATUS GROUP

(Diptera, Culicidae)

By HARRISON G. DYAR

This is the last of the larger groups into which I divided *Aedes*, subgenus *Ochlerotatus* (Ins. Ins. Mens., viii, 104, 1920). The others have been recently gone over in the pages of this magazine. In regard to the nomenclature originally adopted, two changes in the subgeneric names seem indicated, namely *Ochlerotatus* for *Heteronycha* (see Ins. Ins. Mens., ix, 150, 1921) and *Culicelsa* for *Taeniorhynchus*. The latter change rests upon the question as to whether an author's type is to be considered the species he states it to be, or the species actually before him. I adopted the former view, but the consensus of opinion seems to be in favor of the latter. No authoritative ruling could be obtained on the subject. Lynch described the genus *Taeniorhynchus*, founding it on a species which he called *taeniorhynchus* of Wiedemann, but which was really Walker's *titillans*. If *taeniorhynchus* Wied. be considered the type of *Taeniorhynchus* Lynch, as stated by Lynch, then *Taeniorhynchus* becomes a subgenus of *Aedes* as used by me; but if *titillans* Walker be considered the type of *Taeniorhynchus* Lynch, which was the species before Lynch at the time, then *Taeniorhynchus* replaces *Mansonia* Blanchard, a distinct genus. This latter view is adopted by Theobald, Edwards and others, and to avoid confusing diversities in nomenclature, it may be best to follow suit in the present instance.

The species of *Ochlerotatus* of the *serratus* group may be separated by the characters of the male hypopygium as below. Two species which I suppose to belong to the group are unknown in the male. These are *mathisi* Neveu-Lemaire and *knabi* Coquillett, listed in their probable position.

TABLE OF SPECIES

Basal lobe of side piece rounded and bulbous.

Filament of claspette broadly blade-shaped.....*fulvus* Wiedemann

- Filament of claspette not so formed.
- Filament of claspette with retrose point.....*hastatus* Dyar
- Filament of claspette elliptical, projecting at the base and lined,
"calla-lily shaped."
Stem of claspette stout, with a branch,
hortator Dyar & Knab
- Stem of claspette long and slender.....*nubilus* Theobald
- Filament of claspette slender.
Stem of claspette short, the filament longer than it,
.....*dupreei* Coquillett
- Stem of claspette longer than the filament.
Stem much longer than filament; apical lobe large
and prominent.....*serratus* Theobald
- Stem not much longer than filament; apical lobe
small and delicate.....*eucephalaeus* Dyar
- Basal lobe of side piece elongated, finger-shaped.
Basal lobe enlarged at base, the tip slender.
Stem of claspette thick, sinuous.....*atlanticus* Dyar & Knab
- Stem of claspette slender, less sinuous...*tormentor* Dyar & Knab
- Basal lobe slenderly finger-shaped throughout.....*oligopistus* Dyar

Aëdes (Ochlerotatus) fulvus Wiedemann.

- Culex fulvus* Wiedemann, Ausser. Zweifl. Ins., i, 546, 1828.
- Culex ochripes* Macquart, Dipt. exot., Suppl. 4, part 1, 315, 1850.
- Culex flavicosta* Walker, Ins. Saund., 431, 1856.
- Culex flavicosta* Giles, Handb. Gn. or Mosq., 194, 265, 1900.
- Culex fulvus* Giles, Handb. Gn. or Mosq., 190, 210, 1900.
- Culex ochripes*, Giles, Handb. Gn. or Mosq., 201, 334, 1900.
- Taeniorhynchus fulvus* Theobald, Mon. Culic., ii, 208, 1901.
- Taeniorhynchus fulvus* Giles, Handb. Gn. or Mosq., 2 ed., 470, 1902.
- Culex ochripes* Giles, Handb. Gn. or Mosq., 2 ed., 470, 1902.
- Culex fulvus* Giles, Handb. Gn. or Mosq., 2 ed., 394, 1902.
- Culex bimaculatus* Coquillett, Proc. U. S. Nat. Mus., xxv, 84, 1902.
- Taeniorhynchus fulvus* Theobald, Mon. Culic., iii, 237, 1903.
- Culex bimaculatus* Dyar, Journ. N. Y. Ent. Soc., xi, 27, 1903.
- Culex bimaculatus* Dyar, Proc. Ent. Soc. Wash., v, 147, pl. 2, fig.
14, 1903.
- Taeniorhynchus fulvus* Giles, Journ. Trop. Med., vii, 383, 1904.
- Taeniorhynchus fulvus* Lutz, in Bourroul, Mosq. do Brasil, 70,
1904.
- Taeniorhynchus fulvus* Goeldi, Os Mosq. no Pará, 112, 1905.
- Chrysoconops fulvus* Goeldi, Os Mosq. no Pará, 114, 1905.
- Culex ochripes* Blanchard, Les Moust., 275, 1905.
- Taeniorhynchus fulvus* Blanchard, Les Moust., 387, 1905.

- Aedes bimaculatus* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 191, 1906.
- Psorophora fulva* Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 14, 1906.
- Ochlerotatus bimaculatus* Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 18, 1906.
- Ochlerotatus bimaculatus* Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.
- Chrysoconops fulvus* Theobald, Mon. Culic., iv, 493, 1907.
- Chrysoconops fulvus* Peryassú, Os Culic. do Brazil, 49, 230, 1908.
- Aedes fulvus* Knab, Ent. News, xx, 387, 1909.
- Chrysoconops fulvus* Theobald, Mon. Culic., v, 443, 1910.
- Aedes bimaculatus* Thibault, Proc. Ent. Soc. Wash., xii, 22, 1910.
- Aedes bimaculatus* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 622, 1917.
- Aedes fulvus* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 624, 1917.
- Aedes (Ochlerotatus) bimaculatus* Dyar, Ins. Ins. Mens., vi, 78, 1918.
- Aedes bimaculatus* Barret, Ins. Ins. Mens., vii, 63, 1919.
- Aedes bimaculatus* Sherman, Journ. E. Mitchell Sci. Soc., xxxvi, 91, 1920.
- Aedes (Heteronycha) fulvus* Dyar, Ins. Ins. Mens., viii, 105, 1920.
- Aedes (Heteronycha) bimaculatus* Dyar, Ins. Ins. Mens., viii, 105, 1920.
- Aedes fulvus* Dyar, Ins. Ins. Mens., viii, 174, 1920.

In the monograph we recognize *fulvus* and *bimaculatus* as distinct species; but it seems to me that the difference is not more than racial. In the North American form the black markings on the mesothorax are reduced, while the ciliation on the hind legs is less pronounced; but a gradation seems indicated. No Mexican material is in the collection, and I suspect that the apparent hiatus between our Gulf coast form and the form that appears in Central America and southward is due to the absence of collections in the intervening territory.

***Aedes (Ochlerotatus) mathisi* Neveu-Lemaire.**

- Culex mathisi* Neveu-Lemaire, Arch. de Parasit., vi, 13, 1902.
- Culex mathisi* Blanchard, Les Moust., 370, 1905.
- Culex mathisi* Theobald, Mon. Culic., iii, 220, 1903.
- Culex mathisi* Theobald, Mon. Culic., v, 362, 1910.

Culex mathisi Surcouf & Gonzales-Rincones, Essai Dipt. Vul. Venez., 176, 1911.

Aedes (Heteronycha) mathisi Dyar, Ins. Ins. Mens., viii, 105, 1920.

Described from French Guiana from a female, the male being unknown. According to the description, the mesonotum is yellow, marked with brown lines, and with an area of curved scales in the middle.

Aedes (Ochlerotatus) knabi Coquillett.

Culex knabi Coquillett, Proc. Ent. Soc. Wash., vii, 183, 1906.

Aedes knabi Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 203, 1906.

Aedes knabi Dyar, Proc. Ent. Soc. Wash., viii, 16, 1906.

Ochlerotatus knabi Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 18, 1906.

Culex knabi Theobald, Mon. Culic., v, 612, 1910.

Aedes knabi Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 841, 1917.

Aedes (?Gualteria) knabi Dyar, Ins. Ins. Mens., vi, 73, 1918.

No male is yet known. The species resembles *mathisi* and *hortator*, and will presumably be found to belong in this group.

Aedes (Ochlerotatus) hortator Dyar & Knab.

Aedes hortator Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 12, 1907.

Aedes hortator Theobald, Mon. Culic., v, 485, 1910.

Aedes hortator Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 843, 1917.

Aedes (?Gualteria) hortator Dyar, Ins. Ins. Mens., vi, 73, 1918.

Aedes (Heteronycha) hortator Dyar, Ins. Ins. Mens., viii, 105, 1920.

Described from Trinidad from two females. Dr. and Mrs. Bonne have bred the species in Surinam and kindly presented two males to the National Museum.

Aedes (Ochlerotatus) hastatus, new species.

Male. Head and mesonotum entirely covered with silvery scales. Abdomen black dorsally, with large triangular lateral segmental white spots. Legs dark, as the wing-scales.

Hypopygium. Side piece about three times as long as wide; apical lobe long and slender, bare, except for a single coarse seta at tip; basal lobe bulbous, moderate, with many setae on the outer aspect, the spine moderate, adjacent to the basal edge

of the setal group. Claspette stem slender, the filament considerably longer than the stem and with a sharp retrose point at about the middle. Tenth sternites small, with about four rather long spines.

Type, male, No. 25212, U. S. Nat. Mus.; Paitilla, Canal Zone, Panama, December 17, 1921 (J. B. Shropshire).

A single male was bred from a ground-pool, which contained also *Culex coronator*, *Uranotaenia geometrica*, *Psorophora posticus*, *Anopheles apicimacula* and a single female *Aedes*, which may be the female of the present form, but which I preferred to identify as *Aedes serratus*.

Aedes (*Ochlerotatus*) *nubilus* Theobald.

Culex nubilus Theobald, Mon. Culic., iii, 208, 1903.

Culex serratus Coffin (not Theobald), in Shattuck, Bahama Ids., 286, 1905.

Culex nubilus Blanchard, Les Moust., 629, 1905.

Ochlerotatus nubilus Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.

Aedes pertinax Grabham, Can. Ent., xxxviii, 316, 1906.

Aedes pertinax Dyar & Knab, Proc. Biol. Soc. Wash., xix, 163, 1906.

Protoculex quasiserratus Theobald, Mon. Culic., iv, 463, 465, 1907.

Aedes pertinax Pazos, Anal. Acad. Cien. méd. fis. y nat. de la Habana, xlv, 424, 1908.

Aedes pertinax Pazos, San. y Ben., ii, 47, 318, 1909.

Culex nubilus Theobald, Mon. Culic., v, 361, 1910.

Protoculex quasiserratus Theobald, Mon. Culic., v, 401, 1910.

Aedes pertinax Theobald, Mon. Culic., v, 597, 1910.

Culex nubilus Surcouf & Gonzales-Rincones, Essai. Dipt. Vul. Venez., 180, 1911.

Protoculex quasiserratus Surcouf & Gonzales-Rincones, Essai. Dipt. Vul. Venez., 190, 1911.

Aedes nubilus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 721, 1917.

Aedes pertinax Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv., 791, 1917.

Aedes (?*Ochlerotatus*) *nubilus* Dyar, Ins. Ins. Mens., vi, 75, 1918.

Aedes (*Ochlerotatus*) *pertinax* Dyar, Ins. Ins. Mens., vi., 77, 1918.

Aedes polyagrus Dyar, Ins. Ins. Mens., vi, 77, note, 1918.

Aedes (*Ochlerotatus*) *nubilus* Dyar, Ins. Ins. Mens., vi, 128, 1918.

Aedes (*Heteronycha*) *nubilus* Dyar, Ins. Ins. Mens., viii, 105, 1920.

Aedes (Heteronycha) pertinax Dyar, Ins. Ins. Mens., viii, 105, 1920.

In the female, the silver line on the mesonotum may be present or absent. Theobald described *nubilus* from a female in which the silvery mark was absent. The differences given by me in the shape of the claspette filament between *pertinax* and *polyagrus* I do not now consider valid. The shape of this structure seems to vary greatly according to the accidents of preparation. In the form from the Greater Antilles, *Aedes nubilus pertinax* Grabham, the larva has the tuft of the air-tube just within the pecten instead of beyond it.

Aedes (Ochlerotatus) dupreei Coquillett.

Culex dupreei Coquillett, Can. Ent., xxxvi, 10, 1904.

Culex dupreei Smith, Ent. News, xv, 49, 1904.

Culex dupreei Felt, Bull. 79, N. Y. Sta. Mus., 334, 1904.

Culicada dupreei Felt, Bull. 79, N. Y. Sta. Mus., 391c, 1904.

Culex dupreei Smith, Bull. 171, N. J. Agr. Exp. Sta., 38, 1904.

Culex dupreei Smith, N. J. Agr. Exp. Sta., Rept. Mosq., 281, 1905.

Grabhamia dupreei Dyar, Proc. Ent. Soc. Wash., vii, 48, 1905.

Culicada dupreei Felt, Bull. 97, N. Y. Sta. Mus., 447, 479, 1905.

Aedes dupreei Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 195, 1906.

Ochlerotatus dupreei Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 18, 1906.

Ochlerotatus dupreei Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.

Culex dupreei Howard, Osler's Modern Med., 376, 1907.

Protoculex ? dupreei Theobald, Mon. Culic., iv, 466, 1907.

Aedes dupreei Thibault, Proc. Ent. Soc. Wash., xii, 18, 1910.

Protoculex (?) dupreei Theobald, Mon. Culic., v, 402, 1910.

Aedes dupreei Morse, Ann. Rept. N. J. Sta. Mus., 1909, 719, 1910.

Aedes dupreei Headlee, Bull. 276, N. J. Agr. Exp. Sta., 99, 1915.

Aedes dupreei Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 779, 1917.

Aedes (Ochlerotatus) dupreei Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) dupreei Dyar, Ins. Ins. Mens., viii, 105, 1920.

Several of the records in the monograph for this species must be canceled. Washington, D. C., June 15, 1903 (W. V. Warner) refers to *Aedes triseriatus* Say; Las Loras, Costa Rica, Sept. 9, 1905 (F. Knab), depends upon an unbred larva, which apparently agrees with *dupreei*, but may be another species; Trinidad,

W. I., June, 1905 (A. Busck), is *Aedes oligopistus* Dyar. The only authentic records remaining are New Jersey, Louisiana and Arkansas, to which I have no additions to make.

Aedes (Ochlerotatus) serratus Theobald.

Culex serratus Theobald, Mon. Culic., ii, 45, 1901.

Culex serratus Giles, Handb. Gn. or Mosq., 2 ed., 457, 1902.

Culex nigripes Parker, Boyer & Pothier (not Zetterstedt), Bull. 13, Yell. Fev. Inst., 37, 1903.

Culex serratus Bourroul, Mosq. do Brasil, 72, 1904.

Culex serratus Blanchard, Les Moust., 360, 1905.

Culex serratus Goeldi, Os Mosq. no Pará, 95, 1905.

Aedes meridionalis Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 189, 1906.

Ochlerotatus serratus Coquillett (in part), U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.

Aedes serratus Dyar & Knab, Proc. Biol. Soc. Wash., xix, 162, 1906.

Protoculex serratus Theobald (in part), Mon. Culic., iv, 464, 1907.

Culex serratus Aiken, Brit. Guiana Med. Ann., 1906, 68, 1907.

Aedes serratus Busck, Smith, Misc. Colls., quart. iss., lii, 64, 1908.

Protoculex serratus Peryassú, Os Culic. do Brazil, 48, 215, 1908.

Protoculex serratus Theobald (in part), Mon. Culic., v, 401, 1910.

Protoculex serratus Surcouf & Gonzales-Rincones, Essai Dipt. Vul. Venez., 189, 1911.

Aedes serratus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 794, 1917.

Aedes (Ochlerotatus) serratus Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) serratus Dyar, Ins. Ins. Mens., viii, 105, 1920.

Except for the genitalia, this species is very difficult to separate from *Aedes nubilus* Theob. The silvery mesonotal stripe appears to be always present in the female, and is generally broader than in *nubilus*. It is probable that the two are often confused.

Aedes (Ochlerotatus) eucephalaeus Dyar.

Aedes (Ochlerotatus) eucephalaeus Dyar, Ins. Ins. Mens., vi, 127, 1918.

Aedes (Heteronycha) eucephalaeus Dyar, Ins. Ins. Mens., viii, 105, 1920.

In the female the mesonotum is marked with a silver line as in the allied species; but the male has the whole mesonotum

silvered over. The types were collected in Surinam, and no other localities are before me.

Aedes (Ochlerotatus) atlanticus Dyar & Knab.

- Culex serratus* Smith (not Theobald), Ent. News, xiv, 309, 1903.
Culex serratus Smith (not Theobald), Bull. 171, N. J. Agr. Exp. Sta., 38, 1904.
Culex serratus Felt (not Theobald), Bull. 79, N. Y. Sta. Mus., 334, 1904.
Protoculex serratus Felt (not Theobald), Bull. 79, N. Y. Sta. Mus., 391d, 1904.
Protoculex serratus Dyar (not Theobald), Proc. Ent. Soc. Wash., vii, 48, 1905.
Culex serratus Smith (not Theobald), N. J. Agr. Exp. Sta., Rept. Mosq., 277, 1905.
Protoculex serratus Felt (not Theobald), Bull. 97, N. Y. Sta. Mus., 449, 490, 1905.
Culex confirmatus Ludlow (not Lynch), Can. Ent., xxxvii, 388, 1905.
Aedes atlanticus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 190, 1906.
Ochlerotatus serratus Coquillett (not Theobald), U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.
Aedes atlanticus Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.
Protoculex serratus Theobald (not Theobald), Mon. Culic., iv, 464, 1907.
Aedes serratus Morse (not Theobald), Ann. Rept. N. J. Sta. Mus., 1909, 719, 1910.
Leucomyia scapularis Theobald (in part), Mon. Culic., v, 315, 1910.
Aedes serratus Headlee (not Theobald), Bull. 276, N. J. Agr. Exp. Sta., 97, 1915.
Aedes atlanticus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 799, 1917.
Aedes (Ochlerotatus) atlanticus Dyar, Ins. Ins. Mens., vi, 76, 1918.
Aedes atlanticus Sherman, Journ. E. Mitchell Sci. Soc., xxxvi, 90, 1920.
Aedes (Heteronycha) atlanticus Dyar, Ins. Ins. Mens., viii, 105, 1920.

This species was for long confused with *serratus* Theobald, which is not surprising, as the markings are identical, and the slight difference in the color of the legs would scarcely attract

attention. Only when the larvae or male genitalia are studied does the specific difference become readily apparent.

***Aedes* (*Ochlerotatus*) *tormentor* Dyar & Knab.**

- Aedes tormentor* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 189, 1906.
Ochlerotatus serratus Coquillett (not Theobald), U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.
Aedes tormentor Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.
Aedes tormentor Thibault, Proc. Ent. Soc. Wash., xii, 18, 1910.
Aedes tormentor Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 797, 1917.
Aedes tormentor Dyar, Ins. Ins. Mens., vi, 77, note, 1918.
Aedes (*Ochlerotatus*) *tormentor* Dyar, Ins. Ins. Mens., vi, 77, 1918.
Aedes (*Heteronycha*) *tormentor* Dyar, Ins. Ins. Mens., viii, 105, 1920.

This species has no colorational differences from *serratus*; but the larva differs in having a long pecten on the air-tube, which much exceeds the hair-tuft. In both *serratus* and *atlanticus* the pecten does not reach the hair-tuft. The male genitalic differences are well marked. Mr. Franklin Sherman records this species from North Carolina (Journ. E. Mitchell Sci. Soc., xxxvi, 91, No. 10, 1920); but I think that the identification is erroneous and that all the specimens are *atlanticus* D. & K.

***Aedes* (*Ochlerotatus*) *oligopistus* Dyar.**

- Aedes dupreei* Howard, Dyar & Knab (in part, not Coquillett), Mosq. No. & Cent. Am. & W. I., iv, 781, 1917.
Aedes oligopistus Dyar, Ins. Ins. Mens., vi, 76, note, 1918.
Aedes (*Ochlerotatus*) *oligopistus* Dyar, Ins. Ins. Mens., vi, 76, 1918.
Aedes (*Heteronycha*) *oligopistus* Dyar, Ins. Ins. Mens., viii, 105, 1920.

Two male specimens from Trinidad are all that are before me, the female being unknown. The mesonotum is entirely silvered across in the male sex.

The larva has the upper head-hair single, lower in twos; skin sparsely granular; lateral comb of eighth segment of eight large, well separated, sharply pointed scales, without lateral

fringe; anal segment ringed by the plate; air-tube delicate, pointed at the tip, about three times as long as wide, the pecten of four scales at the base, followed by a large 10-haired tuft. The anal gills are missing in the specimen; the small rounded distinct tracheae run into the air-tube.

The known larvae may be separated as follows:

Anal segment ringed by the plate.

Pecten of air-tube with detached teeth outwardly; lateral comb of eighth segment in a large triangular patch.....*fulvus* Wiedemann

Pecten of air-tube uniform; lateral comb with scales in a nearly straight row.

Air-tube short and thick.

Lateral comb with about ten scales (9-11).

Hair tuft of tube at end of pecten or beyond it,

serratus Theobald, *nubilus* Theobald

Hair tuft well within the pecten,

tormentor Dyar & Knab

Lateral comb of six scales.....*atlanticus* Dyar & Knab

Air-tube long and slender.

Air-tube pecten of four scales.....*oligopistus* Dyar

Air-tube pecten of about eight scales; anal gills very long and coarsely tracheate.....*dupreei* Coquillett

Anal segment not ringed by the plate.....*knabi* Coquillett

The larvae of *eucephalaeus*, *hastatus*, *hortator* and *mathisi* are unknown.

NEW AMERICAN MOTHS

(*Lepidoptera*)

BY HARRISON G. DYAR

Family NOCTUIDAE

Subfamily AGROTINAE

Euxoa clavigera, new species.

Fore wing rather dark gray, the stigmata and subterminal space light gray filled; subbasal space tinged with dull luteous centrally; inner line black, double, of three sections, those on costa and internal margin a little further out than the central